

REMARKS

OVERVIEW

Claims 8-13 and 15-16 are pending in this application. Claim 8 has been amended.

Claim 14 has been cancelled. Claims 15-16 are new.

SPECIFICATION

The Examiner has indicated that the amendment filed June 6, 2002 is objected to under 35 U.S.C. § 132 because it introduces new matter into the disclosure. In particular, the Examiner indicates that the added material which is not supported by the original disclosure is in the Abstract "selecting a physical size . . . the physical size." Although the Abstract has been amended, the previous amendment did not add new matter by referring to the "physical size."

The Specification as originally filed discusses "the physical size" through out. For example, in paragraph 6, it is mentioned that "another problem is that resistance value is dependent in part upon the physical size of the resulting thermistor." In the Summary of the Invention, paragraph 20, the Specification discloses "The NTC thermistor of the present invention results in the ability to have standardized sizes of resistors in that the resistance need not be dependent upon the physical size of the thermistor." In paragraph 30, the Specification discloses "The particular mixture selected based on the desired properties of the thermistor such as the size of the thermistor and the associated curve of the thermistor" In paragraph 34, the Applicant explains: "As previously explained, different compositions of metal film materials can be used to achieve different resistances. Thus the present invention allows for thermistors having different resistances at a given temperature to be the same physical size. This relationship between resistance and temperature generally being quantified with a curve, such as is known in the art. This advantage of the present invention permits NTC thermistors having different curves

to be manufactured in the same size. Thus a particular size of thermistor may be made from different mixtures of film materials thus yielding different negative temperature coefficient versus temperature curves." In paragraph 35 of the Specification, the Applicant explains "The present invention allows two different NTC thermistors having the same physical size to have different curves such as curve 70 and curve 72. This advantage allows package sizes to be standardized. This standardization may further reduce manufacturing costs. This standardization also simplifies the process of incorporating an NTC thermistor into an electronics design."

Therefore, there simply was not any new matter introduced as clearly the subject matter was disclosed within the application as filed and therefore not new matter.

ISSUES UNDER 35 U.S.C. § 112

Claims 8-14 have been rejected under 35 U.S.C. § 112, first paragraph, as containing subject matter which was not described in the Specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors at the time of the application was filed had possession of the claimed invention. In particular, the Examiner indicates that the disclosure as originally filed, fails to provide support for "selecting a second type of NTC thermistor . . . ; selecting a second mixture of metal film materials . . . ; and depositing the second mixture of metal film materials on the second substrate." (claim 14). Claim 14 has been cancelled, thereby mooting this rejection. Nevertheless, the Applicant does note that the disclosure as originally filed specifically provided for thermistors having different resistances at a given temperature to be the same physical size. This provides the advantage of NTC thermistors having different curves to be manufactured in the same size. Thus, a particular size of thermistor may be made from different mixtures of the film materials thus yielding different negative temperature coefficient versus temperature curves (see e.g. par. 34).

Further, the Examiner also indicated that the disclosure, as originally filed, failed to provide support for "selecting a physical size . . . the physical size" of claim 8. As previously explained, the Specification as originally filed does provide support for selecting a mixture of metal film materials to provide the negative temperature coefficient of resistance curve while maintaining a desired physical size for the thermistor. The Specification discusses the advantage of being able to use standardized package sizes (see e.g. paragraph 35). The Specification as originally filed further describes how "a particular size of thermistor may be made from different mixtures of the film materials thus yielding different negative temperature coefficient versus temperature curves" (see e.g. paragraph 34). In addition, the application specifically discloses that "The particular mixture selected based on the desired properties of the thermistor such as the size of the thermistor and the associated curve of the thermistor . . ." (see e.g. paragraph 30). Thus, clearly, the Specification teaches that which the Applicant claims. Therefore, this rejection is improper and should be withdrawn.

The Examiner also rejected claims 8-13 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. In particular, in claim 8, lines 5-6, the Examiner indicated that "the negative temperature coefficient of resistance curve lacks proper antecedent basis." The "negative temperature coefficient of resistance curve" in previous claim 8 merely referred to the "negative temperature coefficient of resistance versus temperature curve" in the previous step. Therefore, claim 8 has been amended to replace "negative temperature coefficient of resistance curve" with "negative temperature coefficient of resistances versus temperature curve." Therefore, the Applicant respectfully submits that this rejection should now also be withdrawn.

ISSUES UNDER 35 U.S.C. § 103

Claims 8 and 14 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over U. S. Patent No. 3,574,930 to Riddel et al. in view of U. S. Patent No. 6,099,164 to Rosen et al. Claim 14 has been cancelled, thereby mooted this rejection as to claim 14.

Regarding claims 8-10, the Examiner indicates that Riddel discloses selecting a physical size of a thermistor; selecting a mixture of metal film materials; depositing the mixture of metal film materials on a substrate. Riddel simply does not disclose, teach or suggest all that the Examiner purports that it does, therefore, this rejection should be withdrawn. First, it is important to note that the present invention is directed towards "a method of manufacturing a thin film negative temperature coefficient thermistor." This is clear from the preamble of claim 8. Riddel is simply not directed towards a method of manufacturing a thin film negative temperature coefficient thermistor.

This is clear from column 2, line 69-column 3, line 2. In Riddel, the thermistor material is applied to a nickel substrate by means of printing with a silk screen. The typical thermistor ink contains a liquid vehicle which acts as a binder. In addition to the preamble, Claim 8 specifically required the step of "depositing the mixture of metal film materials on a substrate." A thin film process of depositing is not the same as the printing process of Riddel. To make this distinction even more explicit, however, the Applicant has amended claim 8 to specifically require "depositing the mixture of metal film materials on a substrate using a thin film process." This step is simply not disclosed, taught or suggested by Riddel. Therefore, this rejection should be withdrawn on that basis.

Further, Riddel discloses a thermistor with a physical size, but does not disclose teach or suggest selecting the mixtures of metal film material such that the desired negative temperature

coefficient of resistance versus temperature curve is provided for in a resistor of a desired size.

Therefore, these rejections should also be withdrawn on that basis.

The Examiner has also rejected claims 11-13 under 35 U.S.C. § 103(a) as being unpatentable over U. S. Patent No. 3,574,930 to Riddel et al. and U. S. Patent No. 6,099,164 to Rosen et al. in view of U. S. Patent No. 6,314,637 to Kimura et al. and further in view of Bunsha et al and U. S. Patent No. 4,498,071 to Plough, Jr., et al. Neither Riddel, Rosen, Kimura, Bunsha nor Plough, alone or in combination disclose, teach, or suggest "selecting a mixture of metal film materials to provide the negative temperature coefficient of resistance versus temperature curve while maintaining a desired physical size for the thermistor; and depositing the mixture of metal film materials on a substrate using a thin film process." Therefore, these rejections should be properly withdrawn and the Examiner should find these claims allowable.

NEW CLAIMS

This amendment adds new claims 15 and 16. Claim 15 includes the limitation "wherein the step of depositing is sputter depositing." Support for this claim is found in the Specification as originally filed in the last sentence of paragraph 26, where the Applicant states "this metal oxide mixture film is deposited using sputtering or other physical vapor deposition (PVD) processes."

New claim 16 is similar to claim 8 but uses alternative claim language. Claim 16 provides for "a method of manufacturing a thin negative temperature coefficient thermistor, comprising selecting a mixture of metal film materials to provide desired negative temperature coefficient of resistance properties while maintaining a standardized physical size and depositing the metal film materials on a substrate using a thin film process." This new claim does not introduce any new matter and is well supported by the specification as originally filed.

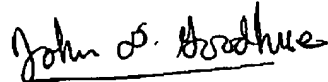
CONCLUSION

No fees or extensions of time are believed to be due in connection with this amendment; however, consider this a request for any extension inadvertently omitted, and charge any additional fees to Deposit Account No. 26-0084.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page is captioned "Version with markings to show changes made."

Reconsideration and allowance is respectfully requested.

Respectfully submitted,



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**AMENDMENT — VERSION WITH MARKINGS
TO SHOW CHANGES MADE**

In the Claims

Please cancel claim 14.

Kindly amend claim 8 as follows:

8. (Thrice Amended)

A method of manufacturing a thin film negative temperature coefficient thermistor comprising:
~~selecting a physical size of the thermistor;~~
selecting a negative temperature coefficient of resistance versus temperature curve;
selecting a mixture of metal film materials to provide the negative temperature coefficient of resistance versus temperature curve while maintaining ~~the a~~ a desired physical size for the thermistor; and
depositing the mixture of metal film materials on a substrate using a thin film process.

Kindly enter new claims 15 and 16 as follows:

15. The method of claim 8 wherein the step of depositing is sputter depositing.

16. A method of manufacturing a thin film negative temperature coefficient thermistor, comprising:

selecting a mixture of metal film materials to provide desired negative temperature coefficient of resistance properties while maintaining a standardized physical size and depositing the metal film materials on a substrate using a thin film process.

In the Abstract

Kindly amend the Abstract as follows:

A method for manufacturing a thin film negative temperature coefficient thermistor is disclosed. The method includes ~~selecting a physical size of the thermistor,~~ selecting a negative temperature coefficient of resistance versus temperature curve, selecting a mixture of metal film materials to provide the negative temperature coefficient of resistance curve while maintaining ~~the a desired~~ physical size, and depositing the mixture of metal film materials on a substrate.